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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/553,841	04/21/2000	Khoi Phan	E0806	6614

7590 08/12/2004
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EXAMINER

REKSTAD, ERICK J

ART UNIT	PAPER NUMBER
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2613

11

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/553,841

Applicant(s)

PHAN ET AL.

Examiner

Erick Rekstad

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

In view of the Appeal Brief filed on May 24, 2004, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 6, and 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by US Patent 4,647,172 to Batchelder et al.

[claim 1]

As shown in Figure 1, Batchelder teaches a system that visually monitors a semiconductor processing comprising:

A develop chamber; and an image collector (27) located at least partially within the develop chamber, the image collector collects energy reflected from inside the develop chamber and transmits a signal indicative of the interior of the chamber (Col 6 Line 64-Col 7 Line 21, Col 8 Lines 11-35).

[claim 2]

The system of claim 1 further includes a light source (21, Fig. 1) that illuminates the interior of the develop chamber to enable the image collector to obtain a visible image of the interior of the chamber (Col 2 Lines 44-49).

[claim 4]

The system of claim 2, the light source is a fiber optic cable with a light emitting portion located within the develop chamber (Col 2 Lines 46-48).

[claim 6]

The system of claim 2, the develop chamber develops photoresist material on a substrate, the light source provides light at a wavelength so as not to expose the photoresist material (Col 2 Lines 41-44, Col 8 Lines 11-35).

[claim 13]

The system of claim 1, the image collector includes a fiber optic cable (29) having a light receiving end (27) disposed within the chamber for collecting images of the interior of the chamber, another end of the fiber optic cable being connected to a camera module (31) that provides the image signal indicative of the interior of the chamber, the camera module converting the image signal into an electrical signal (33)

indicative of the interior of the chamber (Col 2 Lines 48-58, Col 3 Lines 3-9 and 25-38, Col 7 Lines 5-9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-7, 10-12, and 15-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,089,763 to Sanada in view of US Patent 6,313,903 to Ogata.

[claims 1 and 15]

As shown in Figure 10, Sanada describes a system that visually monitors a semiconductor processing. The system monitors the spin coating process. The system includes an image collector (30) located at least partially within the chamber. The image collector collects energy reflected from inside the develop chamber and transmits a signal indicative of the interior of the chamber (Col 27 Lines 11-24).

Sanada does not teach the chamber is a developer. As shown in Figure 13, Ogata teaches the coater and develop unit (13) is used to coat and develop a semiconductor wafer (Col 1 Line 11-Col 2 Line 21). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the imaging system of

Sanada with the coater/developer unit of Ogata because the coater and developer are the same unit.

[claims 2, 3 and 17]

Sanada further teaches the system including a light source (40) that illuminates the interior of the develop chamber to enable the image collector to obtain a visible image of the interior of the chamber as required by claims 2 and 17 (Col 27 Lines 25-37). Sanada further teaches the light source being a light emitting diode as required by claim 3 (Col 27 Line 33).

[claims 5 and 6]

Sanada further teaches the light source being selected so as not to expose the photoresist material (Col 27 Lines 32-37).

[claims 7 and 16]

Sanada teaches the image collector includes a camera module that collects the images and provides an electrical signal indicative of a visual representation of the interior of the chamber (Col 27 Lines 49-59).

[claims 10-12, 18]

Sanada teaches the camera and light source are connected to a viewing station (Confirmation Unit (50)) as required by claim 10. The viewing station provides a display of a visual representation of the interior of the chamber through a monitor (59) and provides controls for selectively controlling activation of the camera module and light source as required by claims 11, 12 and 18 (Figs 10 and 12, Col 27 Line 40-Col 28 Line 3).

[claim 19]

As shown in Figure 16, Sanada further teaches the method for visually monitoring an interior of a chamber. The method includes collecting visual images (T1), providing an image signal indicative thereof (T2) and displaying a visual representation of the interior (T3) (Col 31 Lines 4-45).

[claims 20 and 21]

Sanada further teaches including a light source (40) that illuminates the interior of the develop chamber to enable the image collector to obtain a visible image of the interior of the chamber as required by claim 20 (Col 27 Lines 25-37). Sanada further teaches the light source being a light emitting diode as required by claim 21 (Col 27 Line 33).

[claims 22 and 23]

Sanada teaches the camera and light source are connected to a viewing station (Confirmation Unit (50)) as required by claim 10. The viewing station provides a display of a visual representation of the interior of the chamber through a monitor (59) and provides controls for selectively controlling activation of the camera module and light source as required by claims 22 and 23 (Figs 10 and 12, Col 27 Line 40-Col 28 Line 3).

Claims 4, 8, 9, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanada and Ogata as applied to claims 1, 2, and 7 above, and further in view of US Patent 6,603,874 to Stern et al.

[claims 4,8,9,13, and 14]

Sanada and Ogata teach the system as described above for claims 1, 2 and 7. Sanada further teaches the use of an enclosed processing chamber and the use of LEDs for light (Col 27). Sanada does not teach the benefits of fiber optics. Stern teaches the benefit of using commercially available fiber optics to light an area of a semiconductor wafer and obtain images of a semiconductor wafer as required by claims 4 and 8 (Col 6, Lines 14-26). Stern further teaches the use of a faceted lens as required by claims 9 and 14 (Col 6 Lines 9-13). Stern also teaches that the input light for the fiber optic cable could be "white light" or a single color as generated by a LED or a single wavelength as generated by a laser (Col 5, Lines 5-10). Stern finally teaches that the fiber optic cable can be used with photodetectors in order to generate a video signal (Col 5 Lines 11-17, Fig 4A). It would have been obvious to one skilled in the art at the time of the invention to use fiber optic cable to transmit the light of an LED or laser in the system of Sanada and Ogata to take advantage of the commercially available fiber optics as taught by Stern. It would have been obvious to one skilled in the art at the time of the invention to use photodetectors and fiber optic cable as a camera in the system of Sanada and Ogata in order to take advantage of the commercially available fiber optics as taught by Stern.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 4,851,311 to Millies et al.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contacts

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 703-305-5543. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on 703-305-4856. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

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